

**REMARKS/ARGUMENTS**

While the Examiner's attention is directed to the above-noted amendments to claim 17, these amendments are not believed to significantly alter the nature of the presently claimed invention, but are intended instead to emphasize the fact that the pulp shredding device of the present invention shreds the dewatered pulp substantially in the absence of ozone, and the pressure regulation device regulates the pressure in the reaction vessel so that ozone gas is prevented from leaking upstream through the outlet pipe into the pulp shredding vessel. While these limitations were believed to be implicit in the overall nature of the claims prior to the amendment, the amendment to these claims fully emphasizes these limitations and distinguishes the invention over the art cited by the Examiner. In any event, it is respectfully requested that the Examiner enter these minor amendments, as good cause clearly exists therefor, since at the very least they place these claims in better condition for purposes of appeal, and in fact they place these claims in condition for immediate allowance.

In that regard, it is believed that the Examiner has entirely misinterpreted both the nature of the present invention and the prior art cited hereagainst. In accordance with this invention, the closed container housing the pulp shredding device 4 includes transport means for continuously transporting the shredded pulp without compression out of the pulp shredding vessel through outlet pipe 22. The outlet pipe is sealedly attached to the pulp shredding vessel and gas tightly to the reaction vessel 6 for bleaching the shredded pulp by reaction with ozone gas. The pressure regulation system thus regulates the gas pressure in the pulp shredding vessel and in the reaction vessel to prevent ozone gas from leaking upstream through the outlet pipe into the pulp shredding vessel.

The Examiner initiates this official action by repeating and making final the restriction requirement previously submitted. The Examiner's position, however, is based upon the same misreading of the prior art which afflicts the Examiner's position with respect to the issue of the patentability of claims 17-21. The Examiner thus contends that the feature linking the two inventions (namely, the gas tight conduit for transporting the shredded pulp from the outlet of the pulp shredding device to the reaction vessel) is somehow taught by WO 96/05365 ("the '365 reference"). As will be discussed in more detail below, this position is believed to be incorrect. Applicants thus rely on their position as set forth below in support thereof.

Claims 17-22 have been rejected as being unpatentable over WO 97/05324 ("the '324 reference") in view of the '365 reference. The Examiner repeats his contention that the '324 reference teaches a dewatering device, a shredding device (80, 96, FIG. 4) including a closed pulp shredding vessel 52, transporting conduit 106, and reaction vessel 54 for bleaching with ozone 74. The '365 reference is said to teach "gas sealingly conveying" high consistency pulp through a conveyor with a pulp inlet and outlet, and that during operation the pulp is conveyed through the conveyor 16' which carries screw 24 and shaft 22' provided with breaker arms 40. The Examiner also contends that the screw and breaker arms would keep the pulp passing through the conduit non-compressed as they break up the pulp, and that the '365 reference teaches that in gas phase bleaching downstream of the conveyor would be a vessel having a gaseous reagent which may be toxic or otherwise objectionable, and that it is important that gas does not leak through the conveyor into the atmosphere. The '365 reference is said to further teach gas sealing the conduit using a pressure sensor 36 and differential controller 38 to maintain an upstream pressure

greater than the downstream to prevent leakage backwards through the conduit. It was thus said to be obvious to prevent the ozone gas of the '324 reference from leaking backwards through the pulp conduit 106 using the pressure sensor and pressure regulating device of the '365 reference. This rejection is respectfully traversed in view of the above amendments and arguments and for the reasons set forth hereinafter.

The Examiner's initial discussion of the '365 reference appears to be essentially correct. That is, the '365 reference does teach the use of a pulp conveyor 16 which essentially corresponds to applicants' pulp shredding device 4 and in which the admitted pulp forms a porous plug downstream of screw 24 which helps to ensure that the relevant gas does not leak or insinuate itself through the conveyor 16 for release into the atmosphere. Thus, in this regard the porous plug serves at least partially as a sealing medium. In addition, however, and particularly during downtime, but also during actual operation, particularly with shorter length conveyor 16 (see page 6, lines 5-10), the '365 reference discloses the use of a source 32 of a gas such as oxygen, which is communicated to conduit 12 through control valve 34 to create a pressure gradient to further seal the ends of the conveyor 16 by the flow of gas therethrough.

The problem with the present rejection thus arises when the Examiner attempts to combine this reference with the '324 reference. In attempting to rely on the teachings of the '324 reference, the Examiner contends that the pulp shredding device of the present invention is represented by upstream vessel 52, in which high consistency pulp is bleached with ozone prior to subsequent additional bleaching with a second downstream vessel 54 (see, for example, page 17, lines 20-28). The Examiner thus essentially ignores the fact that the apparatus in the '324 reference which is said to correspond to

pulp screw conveyor 16 of the '365 reference is an ozone-containing apparatus which includes a vertical, helically disposed screw flight 78 in vessel 52 which imparts a circumferential velocity to the pulp particles within the housing 62 and transports these particles downwardly in that housing. Thus, below the screw flight 78 these pulp particles move by the force of gravity downwardly while their size is being further reduced by the action of rotating pins 80 which do not contribute to the downward movement.

Aside from the obvious difficulty in attempting to equate vessel 52 with the claimed pulp shredding device of the present invention, since the latter must operate substantially in the absence of ozone, and vessel 52 is intended to be a bleaching vessel in which the pulp is contacted with ozone, there is no basis for an allegation that a proper combination of these references would somehow obviate these claims. Indeed, rather than having a specific disclosure which teaches this combination, it is quite clear that one of ordinary skill in this art would not make this combination in the first instance. All that need be considered in order to convince one that this is the case is the fact that, if one were to try to combine these two references, and apply the teachings of the '365 reference to the apparatus in the '324 reference, the present invention could not possibly result. The use of the pressure sensor and differential controller of the '365 reference would thus necessarily be applied to maintain a higher gas pressure upstream of the screw flight 78, such as in pipe 58 thereof, than in the downstream portion thereof. This, however, would make it impossible to achieve the precise purposes of the '324 reference; namely, to obtain the desired distribution of ozone gas in a countercurrent flow through vessel 52. It is certainly improper to suggest that it would be obvious to adapt a reference in a manner totally inconsistent with the very

purposes of that reference. The Examiner further contends that it would be obvious in view of the '365 reference to prevent ozone gas of the '324 reference from leaking backwards through the pulp in conduit 106 using the pressure sensor and regulating devices of the '365 reference. This, too, is incorrect and quite inconsistent with the teachings of the '365 reference itself. Although the Examiner does not provide any specific suggestion as to precisely how the sensor and regulating devices of the '324 reference would actually be applied to the '365 reference, it is generally clear that the Examiner's contention is not a tenable one because attempting to do so would once again render the countercurrent flow of ozone gas in vessel 52, a central ingredient of that patent, impossible to maintain.

Indeed, there is actually no reason whatsoever to even try to apply the teachings of the '365 reference to the apparatus of the '324 reference as suggested by the Examiner since, in fact, gas cannot flow backwards through outlet 106 thereof. As is disclosed in the '324 reference itself, the countercurrent flow of contacting gas within housing 62 is induced by a blower 86 which is in fluid communication with a gas outlet 88 of contactor 52 through conduit 90. Gas outlet 88 is in fluid communication with gas separation chamber 68 of contactor 52 and contacting gas discharging from contactor 52 to blower 86 is then supplied to gas inlet 92 of the downstream vessel 54 by means of conduit 94. The result of this is that there is free gas passage between blower 86 and outlet 106, and the high pressure gas from the blower 86 would circulate through vessel 52 to the suction side of blower 86 unless means are provided to prevent this from occurring. In the apparatus of the '324 reference itself, these means comprise the motor 66, shaft 63, rotor drum 64 and the screw flight 78 with pins 80 therein. The rotating action of screw flight 78 and pins 80 creates a swirl of fluidized particles of shredded pulp which

are flung tangentially through the tangentially oriented outlet 106. Thus, the pressure in outlet 106 is higher than the top of vessel 54, making it superfluous to apply any differential pressure arrangement according to the '365 reference. The '324 reference itself states that "virtually no contacting gas discharges from outlet 106 of contactor 52." (See page 23, lines 3 and 4 from the bottom.) Thus, a small, insignificant quantity of fresh ozone gas might conceivably escape through tangential outlet 106, but this would become impossible if the pressure in the top vessel 54 were higher than it outlet 106.

For all of these reasons, it is clear that the combination of these two references, in the first instance, is an improper one and would not be made by anyone of ordinary skill in the art. Nevertheless, however, if such a combination were made, it could not possibly result in the claimed apparatus of the present invention, particularly since the basic purpose of the '324 reference is to obtain ozone bleaching in both the upstream vessel 52 and the downstream vessel 54, and not to prevent ozone from entering the upstream vessel itself, as suggested by the Examiner.

Finally, with respect to claim 22, applicants note with appreciation the Examiner's indication that this claim is allowable over the art. This claim has been rewritten to attempt to correct the indentation of the subparagraphs to eliminate any confusion which might have been created thereby.

It is therefore respectfully submitted that all of the claims in this application are now clearly in condition for allowance, and such action is respectfully solicited. If, however, for any reason the Examiner does not believe that such action can be taken, it is respectfully requested that he telephone applicants' attorney at (908) 654-5000 in order to overcome any additional objections which he might have.

If there are any additional charges in connection with this requested amendment, the Examiner is authorized to charge Deposit Account No. 12-1095 therefor.

Dated: April 16, 2004

Respectfully submitted,

By 

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